

**CSCE100 Introduction to Informatics  
Fall 2020**

**Programming Assignment 1: Metric Converter**

Points: 100 points. Assignment Date: September 1, 2020 Due Date: September 8, 2020

<b>Objectives</b>
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1. To familiarize with writing and running Python programs and the Python environment
2. To familiarize with the use of conditionals and branching
3. To familiarize with data structures
4. To familiarize with standard input/output in Python
5. To be exposed to the use of built-in functions

<b>Relevance to Informatics or Data Science</b>
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1. A user interface program for collecting data
2. A program for pre-processing or processing data

<b>Problem</b>
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Write a program that will prompt the user for a choice between 1 and 3, with each choice being a different metric conversion option: 1 for converting miles to kilometers, 2 for converting pounds to kilograms, and 3 for converting Fahrenheit to Centigrade. After that, the program will prompt the user to enter a value. The program then converts the value using the metric conversion option chosen, and prints the converted value to the screen. After that, the program exits. Here are some additional requirements:

- The program is required to display an explanation of the choices in the beginning before prompting the user for a choice. (5 points)
- The program is required to display the user's choice – this is known as “echoing user input”. (5 points)
- The program is required to display a message (such as “Thank you for using this program.”) before exiting. (5 points)
- If the user enters a choice that is invalid, the program is required to display an error message (such as “Sorry, your input is invalid.”). (5 points)
- You must document your program (see <https://devguide.python.org/documenting/>).
  - Name, Date, Affiliation, a description of the program, what inputs does it need, what outputs does it generate (5 points)
  - Inline comments in the program (5 points)
- You are required to use the correct metric conversions. (Hint: Try using Google to find out the metric conversion rates.). (5 points)

### Example Session Runs (red texts provided by user)

Welcome to the Metric Converter program!

The options are:

1. Miles to Kilometers
2. Pounds to Kilograms
3. Fahrenheit to Centigrade

Please enter your option:

1

Please enter your value to be converted:

100

You have chosen option #1: Miles to Kilometers.

100 miles equals 160.934 kilometers.

Thank you for using the Metric Converter program. Bye!

Welcome to the Metric Converter program!

The options are:

1. Miles to Kilometers
2. Pounds to Kilograms
3. Fahrenheit to Celsius

Please enter your option:

0

Please enter your value to be converted:

100

Sorry, invalid input. Options are 1, 2, or 3.

Thank you for using the Metric Converter program. Bye!

### Handin

1. The submission deadline for all handins is September 08, 2020, 11:00 AM. **Late handins will not be accepted or graded.**
2. You are required to handin a screen capture(s) of your “testing session(s)” using your program. (10 points)
3. You are required to handin all program files. (10 points)
4. You are required to handin online the above files to Canvas under Programming Assignment #1.

### Think About

Now, think about the data collection tools or mechanisms or protocols that we have experienced. In our program, we explicitly solicit input from the user. Are there data collection tools that do not explicitly solicit input from the user? How do they accomplish the task? How do they store their data? Do you know whether there is data being collected about you on any given day? Can you envision how the programs are designed to collect such data?